

CANADIAN GEOGRAPHICAL JOURNAL

JULY
1942

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NO. 1



"NATURAL RESOURCES AND THEIR CONSERVATION"

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La Société de Géographie de Québec, (Canada) Université Laval

Interest for Geography has been revived in the Province of Quebec. The *Société de Géographie de Québec*, which was silent for a few years, has been reorganized; it holds regular meetings. At Montreal, another *Société de Géographie* was created, some years ago, and is now active.

Both these Societies have joined their efforts for the publication of *Le Bulletin des Sociétés de Géographie de Québec et de Montréal*. The first issues of the new series appeared as follows: Nos. 1-2 (January-February, 1942), 16 pages; Nos. 3-4 (March-April), 16 pages; No. 5 (May) 16 pages; No. 6 (June), 24 pages. All these issues are illustrated. The subscription is \$2.00 per year; there is a reserve of the first numbers.

Address: *Le Secrétariat, Société de Géographie, Université Laval, Québec, Québec.*

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As one of its major activities in carrying out its purpose, the Society publishes a monthly magazine, the Canadian Geographical Journal, which is devoted to every phase of geography—historical, physical and economic—first of Canada, then of the British Empire and of the other parts of the world in which Canada has special interest. It is the intention to publish articles in this magazine that will be popular in character, easily read, well illustrated and educational to the young, as well as informative to the adult.

The Canadian Geographical Journal will be sent to each member of the Society in good standing. Membership in the Society is open to any one interested in geographical matters. The annual fee for membership is three dollars in Canada.

The Society has no political or other sectional associations, and is responsible only to its members. All money received is used in producing the Canadian Geographical Journal and in carrying on such other activities for the advancement of geographical knowledge as funds of the Society may permit.

Announcement Re Back Issues

CANADIAN GEOGRAPHICAL JOURNAL

Complete your sets—while Journals are still available

Every day brings requests for photographs reproduced in the Journal — for permission to republish in whole or in part, articles published — for information re regions of Canada, maps, etc., and requests for back issues. This month brought two particularly significant requests: one from Tulsa, Oklahoma, another from New York, both desiring all back copies of the Journal containing records of exploration and information regarding the natural resources of north-western Canada. It was stated that the information was desired for groups of industrialists and financiers who were looking to Canada to place substantial investments.

We are fortunate in having set up a reserve of Journals to meet such demands, in reason. Some calls have taken our complete surplus stocks of specific issues; recently, 500 copies of the Journal published three years ago were sold. Journals over four years old cost the recipient \$1.00 each; over two years and less than four years are 50 cents each; up to two years are still selling at the current single copy price of 35 cents each.

Our war-time series is in constant demand. We suggest your securing copies of these documentary numbers while they are still available. An order form is provided for your convenience.

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This magazine is dedicated to the interpretation, in authentic and popular form, with extensive illustrations, of geography in its widest sense, first of Canada, then of the rest of the British Commonwealth, and other parts of the world in which Canada has special interest.

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The articles in this Journal are indexed in the *Reader's Guide to Periodical Literature* which may be found in any public library.

The British standard of spelling is adopted substantially as used by the Dominion Government and taught in most Canadian schools, the precise authority being the Oxford Dictionary as edited in 1936.

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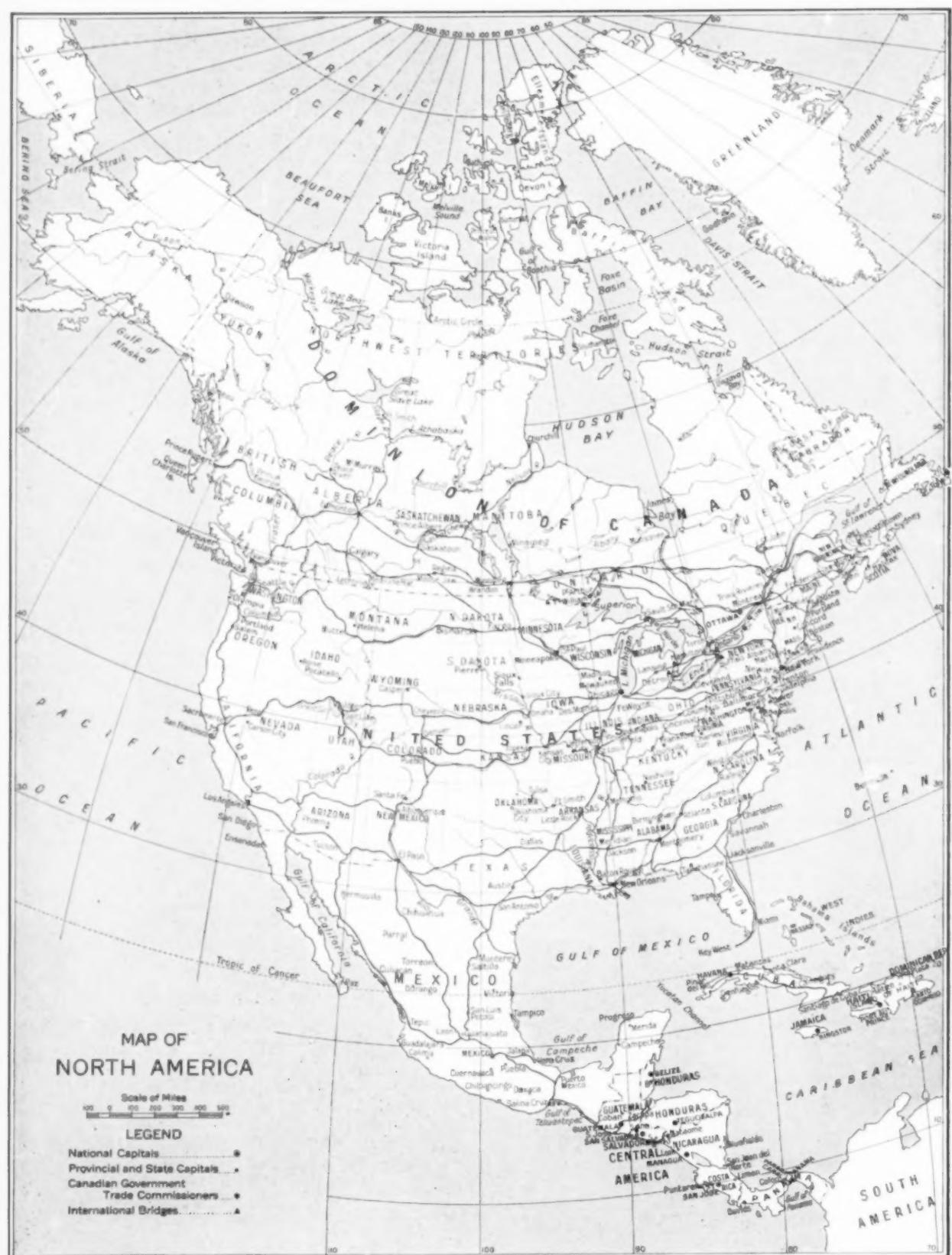
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NATURAL RESOURCES AND THEIR CONSERVATION*

by CHARLES CAMSELL

ONE of the most striking features of our country is its immense size in relation to its population. If the far reaches of the Arctic are included in the calculation, Canada's population density is less than four inhabitants per square mile. If we exclude the northern territories and consider only the areas of the nine provinces, the density is less than six per mile. These densities are low, but it must be remembered that much of Northern Canada cannot sustain any considerable population. In the past seventy years Canada's population has increased from 3,700,000 to 11,500,000, or by 211 per cent. It has been estimated that our resources are sufficient to maintain a population somewhere between two and three times that which we now possess without diminution of the standard of living.

Conservation means wise use. Certain resources, such as mines and oil wells, contain limited quantities of valuable materials which, when used, cannot be replaced. In these cases conservation is concerned with obtaining the maximum benefit from the materials available. But there are many other resources, including agricultural soils and water powers, the forests and wild life, which can be used in perpetuity, if their management is wisely directed. With respect to this latter group the object of conservation is to obtain from the resources the maximum benefits they are capable of yielding to the present generation, and yet to hand them on to our successors in a condition as productive, or more productive, as that in which we found them.

To-day we are at war with a group of strong, clever, and barbarous enemies. Our main object in everything we do must be victory. Perhaps it will be necessary deliberately to over-tax some of our most valuable resources; but this departure from the general principles previously stated

must be recognized as inevitable but temporary. If the needs of war compel us to draw too heavily on our resources for the time being we must do so with the intention of rectifying the damage in the future. If such a course must be followed, it is our duty to be sure that it is truly necessary. We must be guided by facts, not by hysteria.

In discussing Canada's resources I propose to proceed from the inanimate to the animate; from those that merely exist to those that live. I shall try to indicate the extent and relative importance of each major resource, its particular significance with respect to the war effort, and the special problems which its conservation presents.

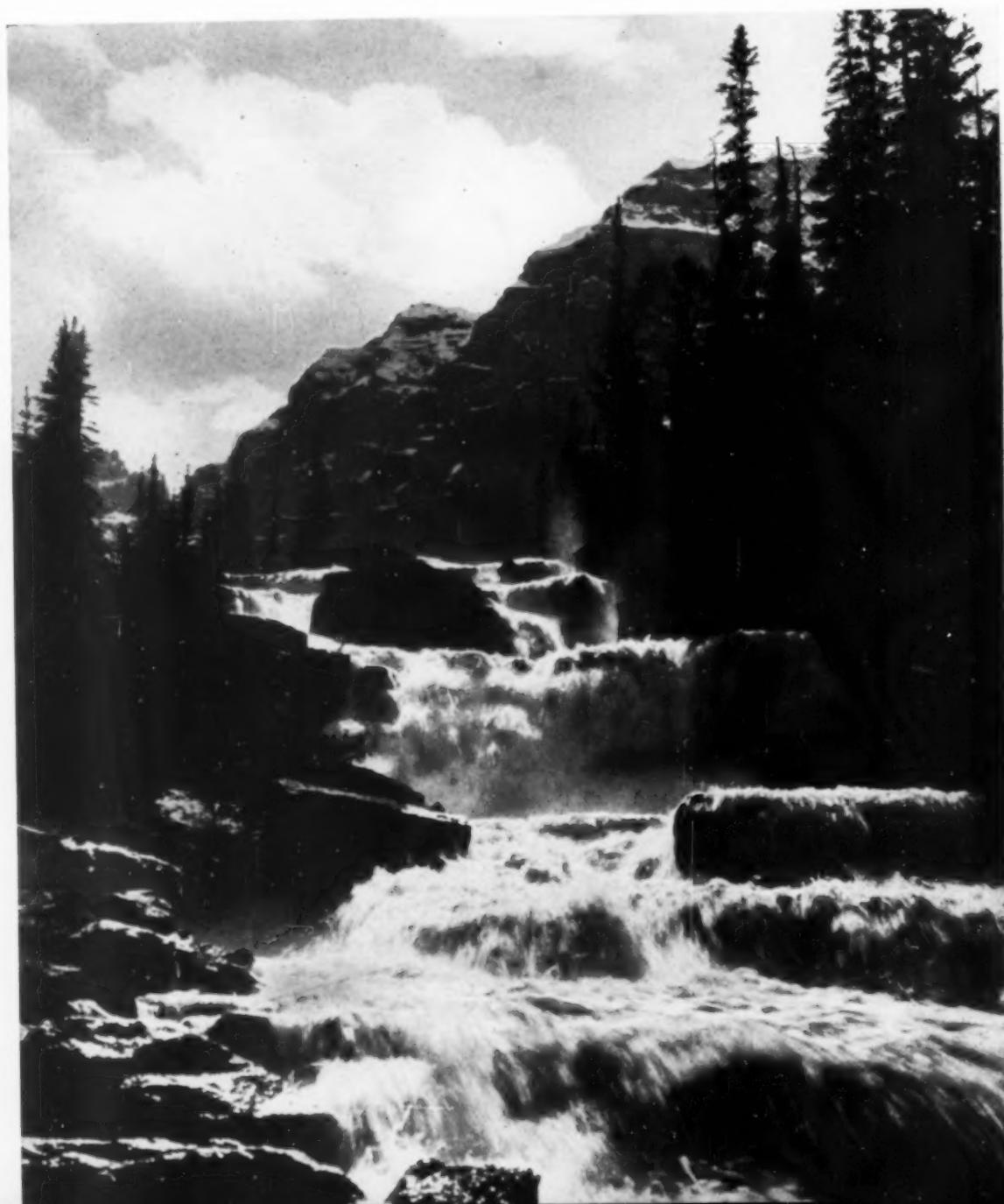
The fundamental resource in Canada, as in all other countries, is the land. On it we live and from it we draw our food and the raw materials for our clothing, shelter and industrial production. In so large a country as Canada it is to be expected that the soils will vary greatly in character from place to place. Many of our soils are built up from materials that have been transported and deposited by various agencies, so that the materials of which they are composed are now far from the rocks from which they were originally derived. Glaciers that once covered most of the northern part of this continent scraped and scoured the soil from the vast Laurentian Plateau, leaving the Canadian Shield for the most part too bare for agriculture but easily accessible to the prospector. Some of the eroded material was subsequently deposited in Southern Canada, thus building up good agricultural soils, and a great deal of it was carried farther south and left by the melting ice in what is now the Northern United States. In this way Canada may be said to have presented a great international gift to her friend and ally to the south.

*From an address by Dr. Camsell, Deputy Minister of Mines and Resources, Ottawa, delivered to the North American Wild Life Conference, at Toronto, April, 1942.

It is now fully recognized that soils, like other resources, must be cared for if their usefulness is to be maintained. They must be protected from erosion by wind and water, and, when they are cropped, measures must be taken to preserve their fertility. One of our chief responsibilities as a nation consists in the maintenance of our soil, for, if that goes, all else is lost.

The drought conditions which have been suffered during the past decade in the

Prairie Provinces made necessary the passage by the Dominion Government of the Prairie Farm Rehabilitation Act, familiarly known as the P.F.R.A. The principal objectives of the P.F.R.A. programme have been to promote methods of crop production on good farm land that will avoid loss of soil by erosion, to eliminate profitless cultivation and restore grazing lands to be used as community pastures, and to conserve water. The first objective



has been largely realized through the widespread adoption by prairie farmers of such erosion control measures as strip farming, trash cover, and suitable tillage practices. Trees have been planted to form shelter belts, and water conservation has been promoted by empoundment. The artificial ponds thus created are helpful to wild life, especially to water-fowl, as well as to the human population.

Our wheat, meat, and cheese are playing an important part in maintaining the people of Britain during the present struggle. For agriculture as a whole the conservation problem is principally one of improving the practice of farming, and in this connection the Dominion Experimental Farms have done splendid work.

After the soil itself we may logically turn to the consideration of Canada's mines. The development of mining in this country in the period between the two great wars has been indeed remarkable. Since so large a part of our country is occupied by the igneous rocks of the Canadian Shield, and since only a small fraction of this huge area has been prospected, we can assume with a good deal of confidence that the spectacular developments of past years will be extended into the future. Canada is fortunate in possessing a wide range of very important minerals, sufficient in quantity not only for her own needs but for much of those of her allies. Thus she is enabled to undertake the manufacture of war equipment on a scale comparable to that of countries with much larger populations. She is supplying the United Kingdom with all of its nickel and with a large part of its requirements of copper, lead, zinc, mercury, and other metals, as well as minerals. Practically all of the nickel and large quantities of other mineral products used in the United States are of Canadian origin.

In order to keep pace with war needs Canada has been producing metals and minerals in record quantities since the



Left: — It is estimated that Canada's total waterpower resources would permit of a turbine installation of about 43 million horse-power. The present installation is approximately 9 million.

Right:—Canada's mines, exclusive of gold, have passed the peace-time peak of 1939. In 1941 the value of metals produced was \$355,000,000. Busy scenes in British Columbia, Ontario and Quebec



Black spruce forests such as the one shown above furnish pulpwood of excellent quality for Canada's newsprint industry.

Canada leads the world in newsprint production and exports more than all other countries combined.

Trees are a crop and may be endlessly renewed under proper management. Canada's forests extend over 58 per cent of the total land area. A stand in British Columbia in which Douglas fir predominates.

NATURAL RESOURCES AND THEIR CONSERVATION

commencement of hostilities. The value of production of metals exclusive of gold has increased from the peace-time peak of nearly \$291,000,000 in 1939, to \$355,000,000 in 1941. This production is likely to show a steady increase until the war ends because severe curtailment of non-essential civilian uses of mine products is much more than offset by the increased demands of war industries. Production of gold in 1941 reached a value of \$206,000,000 as compared with \$184,000,000 in 1939.

As applied to mining, conservation of resources is largely a matter of obtaining maximum efficiency at all stages of the extractive and manufacturing processes. Research has in many cases made possible the recovery of all but a very small percentage of the metal content of the ores. It has also shown us how to mine low-grade ores profitably. Special laboratories are maintained by the Dominion Government for the investigation of these and allied problems. New deposits of ores are energetically being sought by the geological surveyor and the prospector. On them we must depend to locate supplies which will fulfil our needs when the mines now being worked are exhausted.

The production of petroleum in Canada has not yet shown that rapid development which has characterized mining. The chief oil field now in operation is at Turner Valley, in Alberta, but there are good reasons to hope that new discoveries of importance will be made. Because of the urgent need for gasoline and fuel oil exploratory activities are being vigorously carried out. It is known that the huge deposits of tar sands above McMurray on the Athabasca River constitute an enormous potential reserve of petroleum which may be tapped in future.

Water is another natural resource upon which we are absolutely dependent. Its presence in the soil in sufficient quantity is necessary to the production of our principal foods; it furnishes one of our chief means of transportation; it is essential for the maintenance of wildlife; and of particular importance to Canada are her resources of hydro-electric power. It is estimated that our total waterpower resources would permit of a turbine installation of about 43,700,000 horse-power. The present development, approximating 8,800,000 horse-power represents slightly more than 20 per cent of that total.

Since the outbreak of war the demand for power has enormously increased. In-

tensive efforts have been made to meet the growing demands, and new waterpower installations are providing more than 550,000 horse-power. Further undertakings now under active construction will add an additional 650,000 horse-power during the next eighteen months.

From hydro-electric power we obtain much of the tremendous energy needed in the manufacture of pulp and paper, for mining, smelting and refining of metals, for the production of chemicals and explosives, and for the operation of many other industries. It is particularly fortunate that great hydro-electric stations can be operated in the Provinces of Ontario and Quebec where many of our chief manufacturing industries are concentrated, but which have no native coal.

Waterpower is a resource which can be maintained indefinitely because lakes and streams are constantly replenished by rain and melting snow. To make the best use of available power continuous studies of stream flow must be conducted. Dams must be built and reservoirs created to insure satisfactory water supplies throughout the year. When all these steps have been taken there remains the protection of the drainage basins which supply the water. This has been found to be mainly a matter of maintaining satisfactory forest cover.

Forests differ from mines and waterpower inasmuch as they may be termed a biological resource. Trees reproduce themselves, grow old and die and must be considered as a crop even though the time necessary to their development is many years. Forest resources can be endlessly renewed under proper management, but they are by nature exposed to agencies of destruction—fire, insects, diseases and winds—which do not threaten resources such as minerals and water.

Forests occupy a place of relatively greater importance in Canada than they do in most countries. Their area exceeds 1,220,000 square miles, equivalent to about 35 per cent of the land area of the Dominion. In the nine provinces 58 per cent of the total land area is occupied by trees. In constitution our forests show great variation, ranging in kind from the stately stands of Douglas fir, red cedar and hemlock in British Columbia to the hardwoods, pines and spruces of the East.

About 450,000 square miles of the forest area is classed as non-productive, that is to say, it bears forests growing under

adverse site conditions which prevent the trees from reaching merchantable size. These forests, however, are by no means without real value. They protect drainage basins and conserve water supplies, furnish fuel and building materials to natives and travellers in remote areas, and provide shelter for many of our most valuable fur-bearers and game animals.

The productive forest lands now bear merchantable timber or are capable of producing merchantable material in future. It is estimated that we possess 770,000 square miles of productive forests of which about 430,000 square miles are considered to be accessible to commercial operations under present conditions.

On this vast forest estate are based some of Canada's greatest industries. According to the latest available statistics the manufacture of pulp and paper employs more capital and pays out more in salaries and wages than any other Canadian manufacturing industry. Saw-mills are more numerous and employ more men than any other type of manufacturing plant.

The contribution of the forests to our war effort has been impressive. More than nine thousand wooden buildings have been erected for the accommodation and training of members of the fighting services, for the housing of equipment and of war factories. Canada's forests have been the chief source of supply of soft-wood lumber open to the United Kingdom and we have sent large volumes of our wood, wood pulp, and paper to the United States.

The products of forests and forest industries occupy an exceptionally important place in the external trade of Canada. In 1941 the value of exports of "wood, wood products and paper" exceeded the value of imports of similar commodities by \$350,000,000.

In summer thousands of tourists from the United States and from our own cities go into the Canadian woods in search of that relaxation which has become an imperative necessity if we are to stand up to the strain of current events.

Conservation of Canada's forests is one of the most important and most difficult problems with which we are faced. We must provide better protection against the ravages of fire, insects and tree diseases and introduce better methods of management, including the practice of sylviculture. If we succeed, the future of our forest industries will be assured. Administration

of the forests is, for the most part, carried on by the provincial governments, but the Dominion maintains a research organization for the study of forestry problems and the utilization of forest products.

Finally we come to the consideration of that resource of special interest to conservationists and sportsmen—wild life. It was the pursuit of one of the most important groups of wildlife—the fur-bearers—which led directly to the exploration and original opening up of our country. From the French settlements on the St. Lawrence and the British posts on Hudson Bay fur traders penetrated to the plains of the Saskatchewan and to the Arctic Ocean even in the days when there was strife between their nations. After the Battle of the Plains of Abraham had put an end to war-like competition, British traders and hardy French-Canadian voyageurs soon reached the Rocky Mountains and later dipped their paddles in the waters of the Pacific.

Most important of all furs to the early trapper was the beaver, but fisher, otter and lynx were also eagerly sought. To-day, muskrat, mink and the foxes are our most important fur animals, but I am happy to be able to say that energetic measures which are being taken to increase the beaver population are yielding most encouraging results. Similarly, the planned development of muskrat marshes is resulting in an increased yield of this valuable fur and in great improvement of the social condition of families whose chief means of subsistence is the trap line. In addition to wild fur we have an increasingly important fur-farming industry well distributed throughout the country.

Game animals of various species are found in practically every part of Canada. They constitute a major attraction to sportsmen from the United States who come here to hunt moose, caribou, mountain sheep and grizzly bear. The number of white-tailed and mule deer taken annually by our own citizens is large enough to constitute an important item in the nation's food supply.

Our resources in wild bird life are abundant, widespread and varied. Nearly five hundred different species of birds occur naturally in this country. Many of the more important game birds are migratory, and raise their young in Canada during the summer but fly south to pass the winter in more southern climes. Wild



Photo by A. Haak

Canadian geese in flight. A characteristic scene in the prairie lowlands

birds are of marked value to Canada in controlling insects that attack forests and farm crops, in providing sport and recreation for our citizens, in attracting and pleasing tourist visitors, and in furnishing food for human consumption.

In addition to birds and mammals Canada is endowed with a great wealth of fish both in her inland waters and in the seas on her coasts. In sport fish her resources are unsurpassed because of the enormous extent of her inland waters. No one yet knows how many of these lakes we have, but there are thousands whose waters have never been broken by an angler's cast.

Control of Canadian natural resources lying within provincial boundaries is primarily the responsibility of provincial governments. The Dominion Government, how-

ever, controls all the resources of the Northwest Territories and Yukon. Thus the Dominion is fully responsible for the administration of wildlife in two-fifths of the whole Dominion and, in addition, manages the animal, bird and fish populations of the National Parks. Administration of fisheries in coastal and international waters lies with the Federal Department of Fisheries, but all other wildlife activities of the Federal Government are centred in the Department of Mines and Resources.

At first glance it may seem that administration of resources by ten separate authorities must be a complex and rather cumbersome procedure. In actual practice it works out very well, and it has the great merit of providing for those local variations in procedure which are essential to

the management of resources in so vast an area. Particular questions that affect several or all of the authorities concerned are discussed at periodic conferences, usually held in Ottawa under the sponsorship of the Minister of Mines and Resources, and these gatherings have been most fruitful in unifying policy and providing for mutual co-operation and assistance.

I should like to indicate briefly the particular functions of the Federal authority. One of the most forward steps in wildlife conservation that has ever been taken was the Migratory Birds Treaty adopted by Canada and the United States in 1916. It is now of particular interest to remember that one of the reasons for the adoption of that Treaty was the importance of birds in safeguarding food crops in time of war. Its results are too well known to require detailed discussion here, but it can be said with confidence that that Treaty is the foundation stone on which the conservation of migratory birds, including the waterfowl in North America, is based.

One of the most important functions of the National Parks is the sanctuary that they provide for wildlife of all kinds. Within their boundaries members of the public are able to observe all sorts of game and other animals in their natural state, and to the scientist they are of particular importance as havens for relatively rare species which might otherwise have become extinct. Protection is afforded to predators as well as to game animals and an effort is made to maintain approximately the balance which nature has ordained.

The principal object of our administration of wildlife in the northern territories is to maintain a supply of food for the natives and stocks of fur-bearers which provide their chief means of livelihood. Numerous sanctuaries, where all hunting and trapping is prohibited, have been established and in other extensive areas these activities can only be carried on under restrictions. Generally speaking only the native Indians and Eskimos are permitted to trap in the territories although permits are granted to a limited number of white men who have been established in the region for a long time.

A particularly interesting development, which may be considered as intermediate between true wildlife management and stock-raising, is the introduction of a

reindeer herd into the territory east of the mouth of the Mackenzie River. This herd was purchased in Alaska and the long drive from its original location to the reindeer reserve at Kittigazuit marked an epic in northern annals. Since arriving in their new home the animals have increased in numbers and in average weight. We now have 5,000 head in the main herd, which are under departmental management, and an additional 3,000 head in two herds managed by natives. The primary object of introducing these animals was, of course, to stabilize the food and clothing supplies of the natives in the Far North.

Here I should say that the policies adopted have resulted in marked benefit to the natives. Most important of their results is the growing sense of independence and confidence of the native in himself and the birth of a new hope that he can, and a new determination that he will, make his contribution, personally and racially, to the new Canada in which he is to be given his proper and respected place.

No matter how wise the laws adopted or how sound the regulations, success in wildlife management depends in the last analysis on the co-operation and understanding of the public. The Canadian Government constantly uses the instrument of publicity to inform our people and to secure their support. A "Natural Resources Bulletin" is issued to the press, special articles are prepared for newspapers and magazines, pamphlets on particular subjects are distributed, motion picture films and lantern slides are lent widely, lectures and broadcasts by qualified speakers are arranged, and posters and other media are used as circumstances dictate.

We in Canada now fully appreciate the fact that conservation of our natural resources is one of the chief tasks facing us. If the resources fail, our civilization must fail also, for the denudation of our land would inevitably be followed by human want, degradation, misery and death. Furthermore, we have to recognize that our resources can only support a population of a certain size without reduction in the standard of living we now enjoy. Canada has been settled by peoples from many lands who came here in search of freedom and happiness. Their descendants will not gladly tolerate restriction of their opportunities to live in comfort because of overcrowding.

NATURAL RESOURCES AND THEIR CONSERVATION

I have tried to suggest briefly the importance of our chief resources and the kind of problems which they present for solution. Many of these problems can only be studied in the light of accurate scientific knowledge, and to the scientists who have devoted their lives to obtaining knowledge that will be used for the improvement of the lot of their fellows we must be eternally grateful. The management of resources to-day has become too big a problem for the hit-or-miss methods of the past.

We endeavour to secure the best scientific advice wherever it can be found. As examples I might mention the assistance we obtain from the Bureau of Animal Population at Oxford University which analyses the trends of wildlife population in Canada from data which we supply. The Fish and Wild Life Service of the Department of the Interior of the United States has sent experts to practically all parts of Canada to study conditions here. Thus we have co-operation of those in other lands with members of our own scientific staff. It is no exaggeration to

say that the basis of future progress must be present research.

Not least among the responsibilities facing us is that of providing a decent future for the men who will return from the armed services to civil life when this war has been fought to a successful conclusion. Here activities based on proper development of our resources can play a most important part, and probably the principal part. Much thought and careful planning is being devoted to this question at the present time.

We in Canada have gained much from the experience and energy of our friends in the United States. The Dominion has been helped by the provinces and in turn has, I hope, been of help to them. Here we have the key to the future. Through co-operation, and the pooling of knowledge and ability, it lies within our power to build in North America a civilization higher than any that the world has yet seen. Its object will be freedom and happiness for all—and its material foundation must lie in the wise use of our natural resources.

A contented angler—in Canada's great outdoors

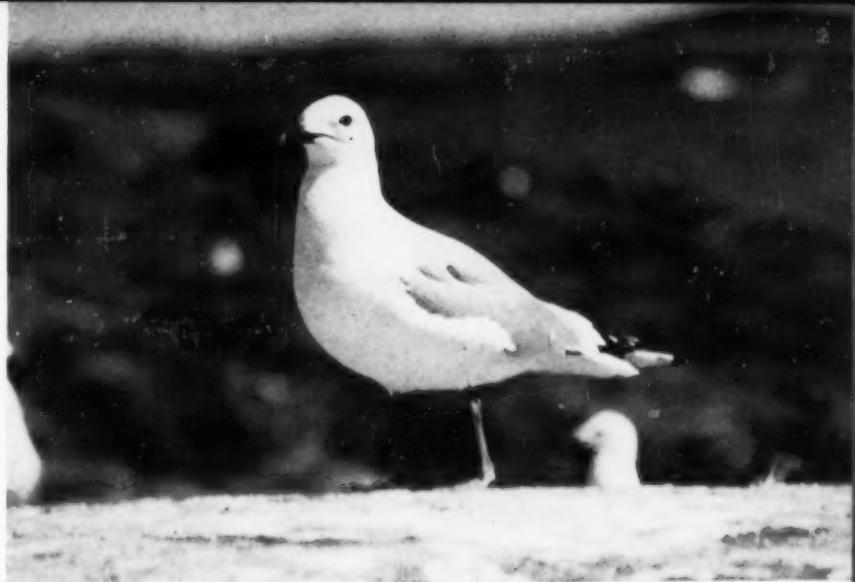




Top left:—Wide-ranging herring gulls build their bulky nests on islands along the coast and in inland lakes.

Bottom left:—Family life of the herring gull. The female is standing over two eggs about to hatch. The first hatched young one is near the male in the background.

Photos by Alfred O. Gross



Photo, Canadian National Parks Bureau

The adult ring-billed gull is a beautiful bird.

FEATHERED FOLK BY ATLANTIC TIDES

by HARRISON F. LEWIS

SEABIRDS are living ornaments of wave and shore. Along the sinuous, far-flung lines where land and ocean meet, abundant life in manifold forms finds its culmination in the grace and activity of the feathered attendants of Neptune. Assembled and sustained by the bounty of the tides, these streamlined seafowl—from the light, darting terns to the heavy, submarine loons and cormorants—so animate and adorn surf and rock and strand as inevitably to arouse the admiration and interest of the human visitor.

Canada's Atlantic Coast is liberally endowed with seabird life. About every harbour and from every beach and headland its fluttering wings may be seen and its wild cries may be heard in their season. Surpassing all incidental and ephemeral gatherings in interest and attractiveness are those avian communities on favoured islands and cliffs, where, confessing their dependence on the land for the essential task of reproduction, these winged inhabitants of watery vastness gather each summer to nest and rear their young.

The best known of Canada's seabird rookeries is that to be found on the cliffs of Bonaventure Island and the summit of Percé Rock, both near the little village of Percé, at the eastern tip of the Gaspé Peninsula of the Province of Quebec. On these rocky strongholds gather every spring for nesting many thousands of seabirds of a variety of kinds, including gannets, gulls, cormorants, and murres. The bird colony thus formed, which has been maintained as a sanctuary for nearly a quarter of a

century by the Governments of Quebec and the Dominion, owes its fame not only to its great multitude of conspicuous and unusual waterfowl incomparably displayed as part of a natural panorama of exceptional magnificence, but also to the ease and comfort with which it may be visited, observed, and photographed with a minimum of disturbance to its winged members.

Doubtless the most familiar and generally recognized of the seabirds of Canada's Atlantic Coast are the gulls, of which several different kinds nest there. The most abundant and widely distributed of these is the common herring gull. It nests not only along the coast but also on suitable island sites in the Great Lakes and in many smaller bodies of fresh water. It is useful as an indiscriminate scavenger, and its boldness in frequently coming close about vessels and wharves in search of food makes it readily observable at short range. Adult herring gulls are about two feet long, with white plumage except for a pale bluish-grey mantle on wings and back and white-spotted black wing-tips. Three years are required for full development of this colouring and younger birds are clad in various shades of grey and brown.

Like most seabirds, herring gulls make no attempt, under normal conditions, to hide their nests, but place them in full view on the ground, depending for protection on their own strength and prowess and on a situation, on island or cliff, that is inaccessible to most of their four-footed enemies. In places where they have been much troubled by intruders and nest-robbers

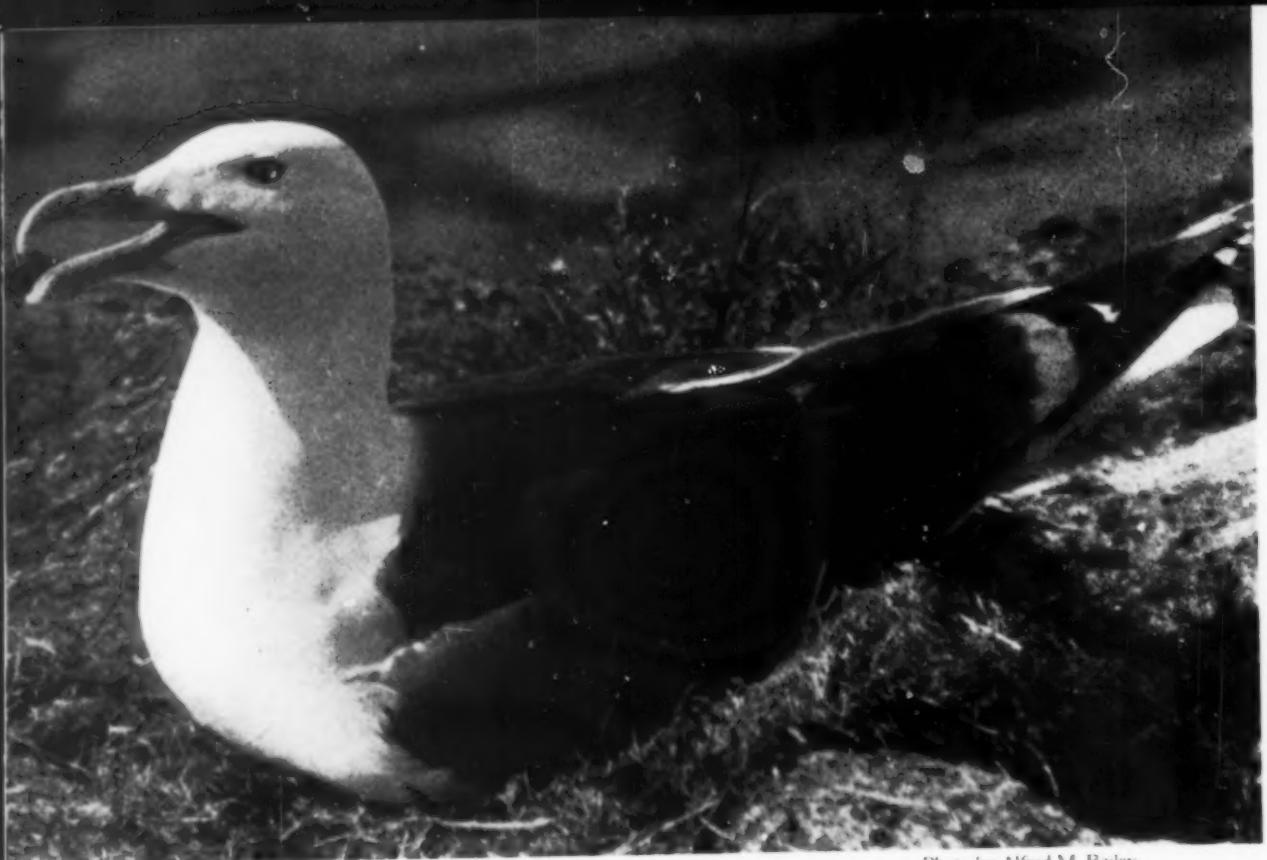


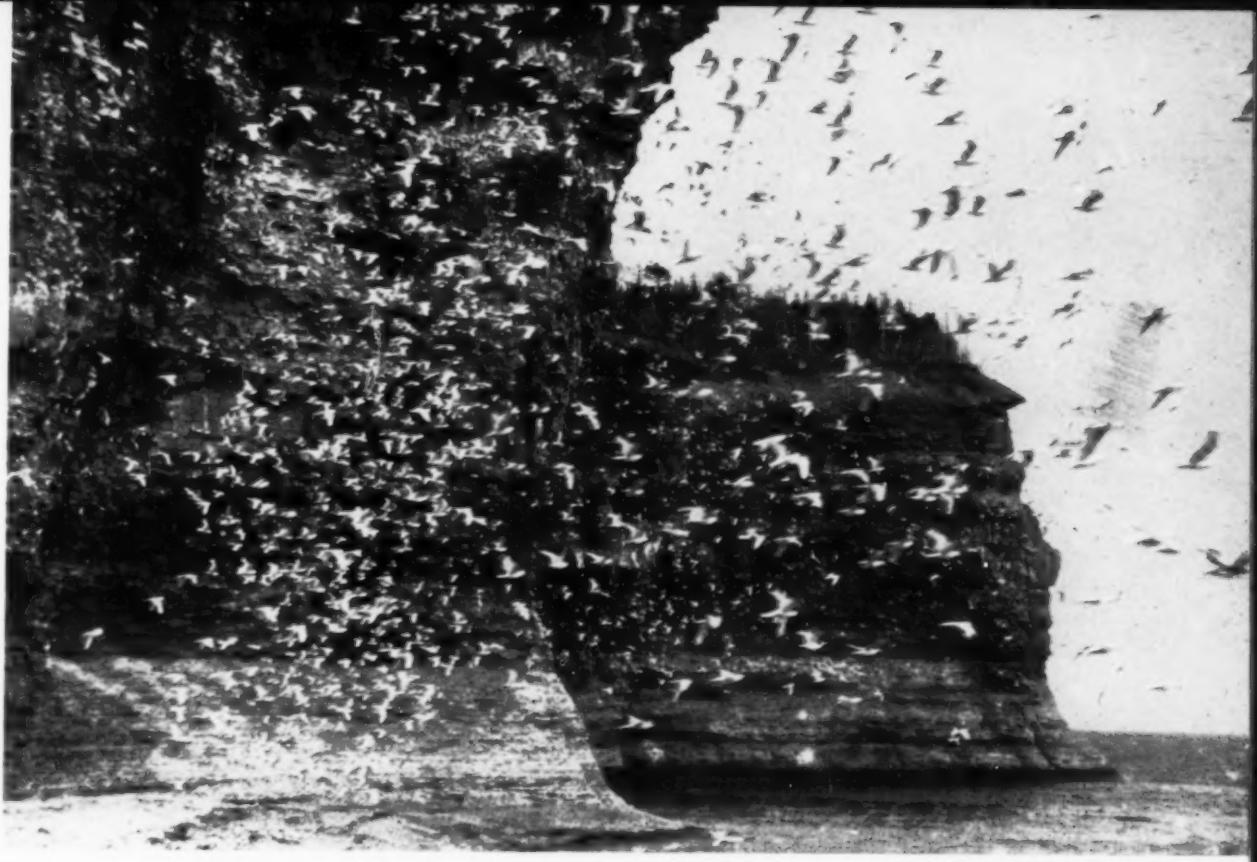
Photo by Alfred M. Bailey

Great black-backed gulls, which nest on both sides of the North Atlantic, are strong and noble-looking, but have some troublesome habits.

A ring-billed gull shows how to soar. These gulls nest on islands in the Great Lakes and prairie lakes, as well as in the Gulf of St. Lawrence.

Photo by Howard Cleaves





Photo, National Museum of Canada

Thousands of kittiwakes nest on the cliffs at Gullcliff Bay, Anticosti Island, Quebec.

they often build in the concealment of dense thickets or even in the upper branches of spruce trees. The nest itself is a rather bulky bowl of dry seaweed, straw, small sticks and similar materials easily obtainable in the vicinity. Three eggs is the standard number in a set.

When first hatched, young herring gulls are weak, wet, and prickly with pin-feathers and can by no stretch of the imagination be called handsome. A few hours later, however, when they have dried and gained strength and alertness and when the pin-feathers have burst into tufts of fine grey down that merge into a soft, spotted covering for their little bodies, they present a most captivating appearance.

Ring-billed gulls closely resemble herring gulls in general aspect, but are smaller and show minor differences in colour. Their centre of population is in the interior of northern North America and their only known nesting colonies on the Atlantic Seaboard are scattered along the north shore of the Gulf of St. Lawrence.

The great black-backed gull, with a length of two and a half feet, is one of the largest gulls of Eastern Canada. The dark slate-coloured mantle on wings and back makes this bird readily distinguishable from the other gulls of that region.

Dove-like kittiwake gulls, here shown at home on a cliff, are truly marine birds, known in some instances to have crossed the Atlantic.





In every line the common tern exemplifies airy gracefulness. This one is about to settle on its eggs.

Photo by A. A. Allen

eastern North America are much more remarkable. After the nesting season has ended, many of them, at least, cross the Atlantic to Europe and then fly by way of Africa to wintering areas south of that continent. A young arctic tern that was banded on the coast of Labrador in July, when it was not yet old enough to fly, was found dead the following November in Natal, South Africa, more than nine thousand miles from its place of origin.

While this gull has been described as an ideally noble-looking bird, it is in distinct disfavour in some coastal regions because, when the small fish on which it commonly feeds are lacking, it devours many eggs and young of other birds, particularly of the valuable eider ducks. It is probable that, like many other birds, this gull when in normal numbers fills a useful place, but when overabundant becomes objectionably destructive.

Smallest and most truly marine of the breeding gulls of our East Coast is the dove-like kittiwake. It nests on the ledges of cliffs, from the Gulf of St. Lawrence northward, as well as on the coasts of Northern Europe. A few are included in the seabird colony at Percé Rock and Bonaventure Island, but larger nesting aggregations are to be found at Seven Islands, Quebec, on the Bird Rocks and the eastern end of Anticosti, and in Newfoundland. Kittiwakes banded with inscribed metal rings when they were nestlings on the north coast of European Russia have been found later in Newfoundland.

The terns are relatives of the gulls, but are easily distinguishable by their lighter and more elegant build, their willowy wing-beats, and their habit of taking their finny prey by arrow-like plunges from flight above the water. The adult terns of Canada's Atlantic Coast are clad in white plumage, except for a black cap on the head and a pearly-grey mantle on back and wings and are also characterized by forked tails. The common and arctic terns are so much alike that even experts have difficulty in distinguishing them in life. Our common terns go to the Caribbean region for the winter, but banding with numbered metal rings has shown that the migrations of the arctic terns of

The Caspian tern, which is about as large as a ring-billed gull, is scattered over a very wide range, but is relatively uncommon. It is known to nest on the Atlantic Coast of Canada only in one small group of thirty or forty pairs on the north shore of the Gulf of St. Lawrence, but it has inland nesting colonies in the Great Lakes and elsewhere. A few representatives of the roseate tern, a comparatively southern form, nest in Nova Scotia.

Although two kinds of loons occur commonly along our Atlantic Coast, the so-called common loon, the larger of the two, nests only in inland waters. The red-throated loon, which is able to take flight from the restricted area of a small pond, nests frequently beside such bodies of water, both on the mainland and on coastal islands, from the Gulf of St. Lawrence northward. Its breeding dress, with a brick-red area on the throat, and delicate pencillings of black and white on the nape, is restrained, yet tasteful and attractive. Its normal family, hatched on a pond's brink, consists of two downy young that plunge into the water when a day or two old. Because they cannot walk, they must remain in the pond for some six weeks, until they attain the ability to fly away.

Several kinds of wild ducks occur commonly on the Atlantic Coast of Canada, but the one that is a characteristic nesting bird of that region, in contrast with more inland areas, is the southern eider. This is a comparatively large and heavy-bodied duck, with marked difference between the plumages of the two sexes. The drake, in his conspicuous black-and-white costume, shaded with green on the sides and back of the head, appears to reflect the lights and shadows of the drift ice and clear sea-



Arctic terns nest in northern regions around the globe and are famous for their long migrations. This one was photographed on its nest at Churchill, Manitoba.

Photo, National Museum of Canada

water among which he spends much of his time. His mate wears a dull brown attire that, while it has attractive minor markings of black and white that appear on close examination, is suitable camouflage for a bird that must incubate its eggs among bushes, dead leaves, and tundra moss. On the breasts of the female eiders grows the eiderdown that, when gathered and processed, is a valuable material for filling sleeping-bags and bed comforters. It is collected under government supervision from the nests, where it is placed as a lining by the mother duck.

Centre right:—Our largest tern is the Caspian, which nests in scattered colonies from Great Slave Lake to the Gulf of St. Lawrence and southward.

Photo by A. A. Allen

Bottom right:—Such common tern families may be found in season in Europe, Asia, Africa, and North and South America. In Canada, nesting colonies are found in the interior and on the East Coast

Photo by Alfred M. Bailey



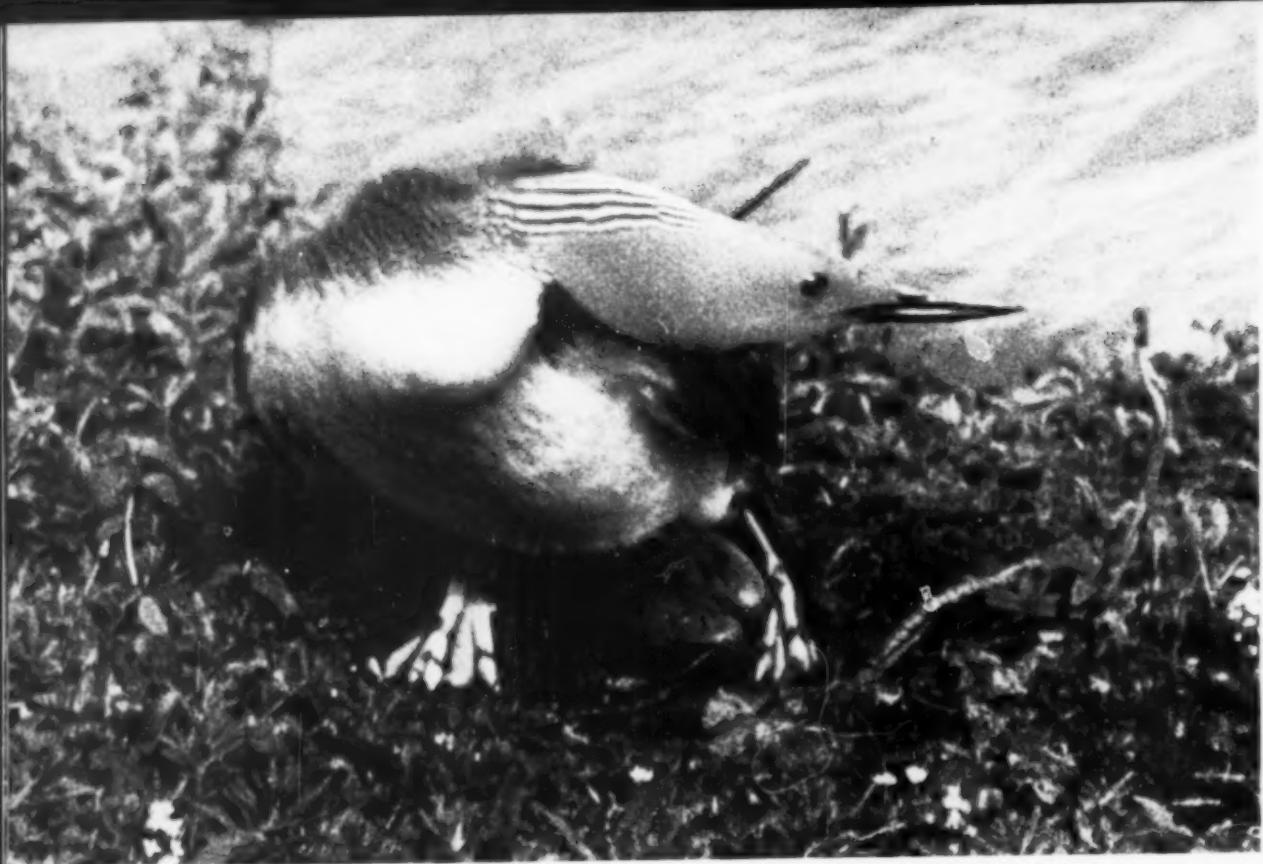


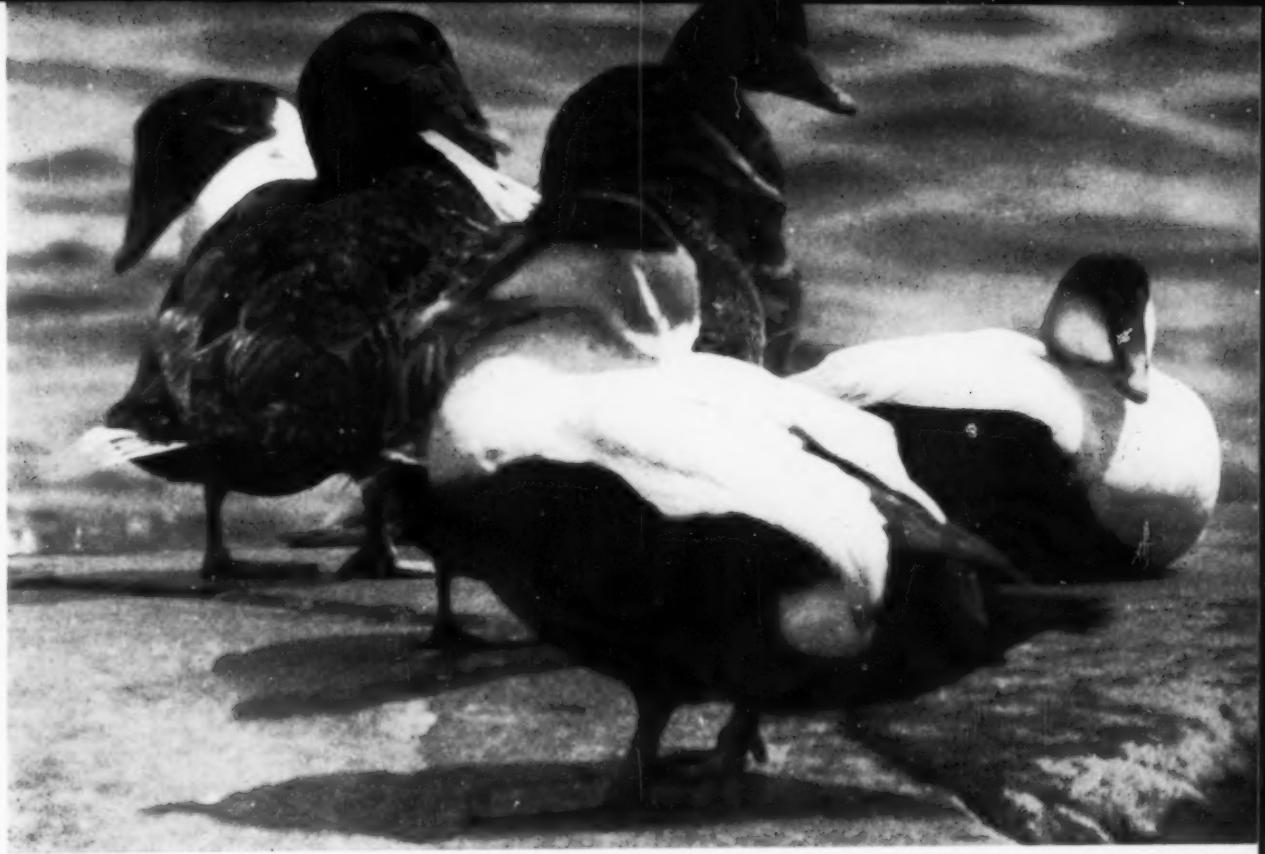
Photo by Alfred M. Bailey

The handsome red-throated loon peers for possible danger before settling on its eggs.

Young red-throated loons are protected and fed by their parents on their home pond until they are able to fly.

Photo, Canadian National Parks Bureau





Drakes and ducks of the southern eider, the most characteristic nesting sea-duck of Canada's Atlantic Coast.

Photos by Alfred O. Gross

The female eider prefers a nest-site with some shelter, even though it be only that furnished by a drift-log.

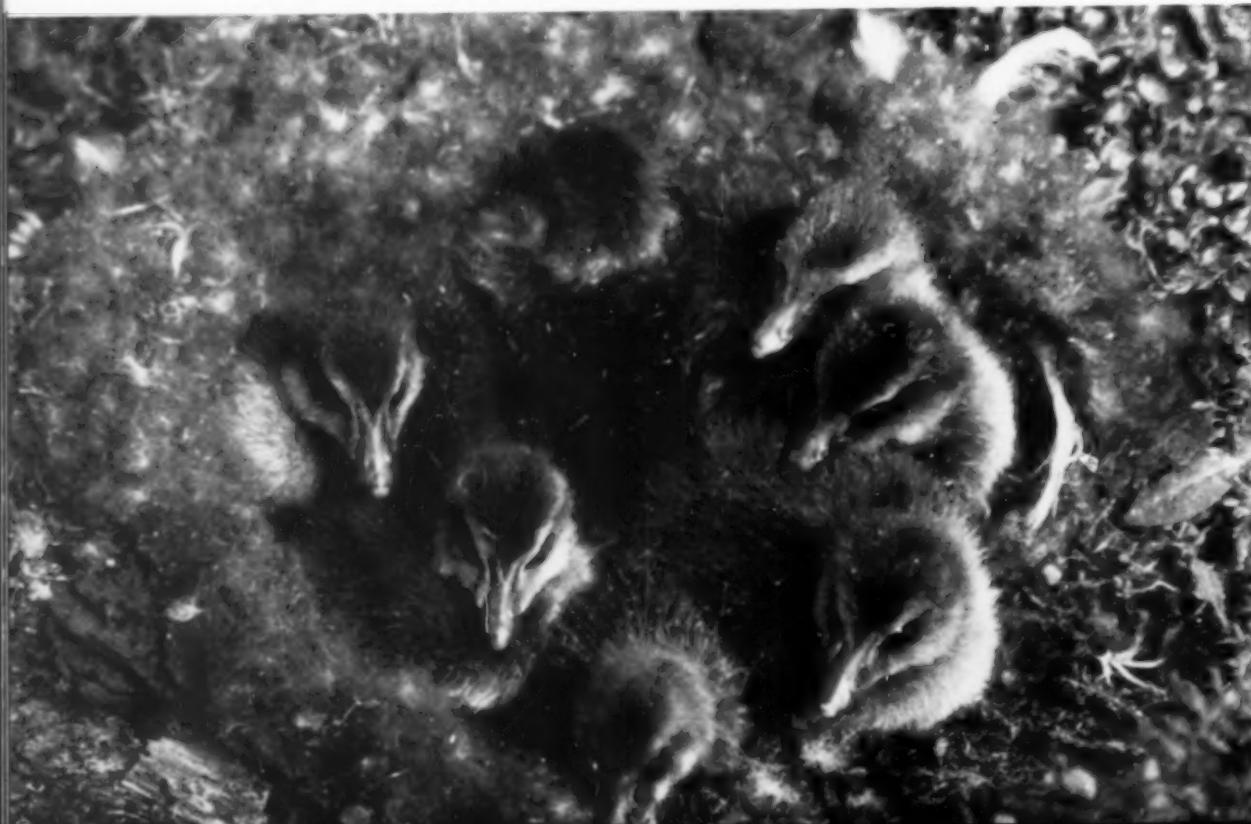




Since Leach's petrels enter and leave their burrows only at night, it is impracticable to photograph them by day, but at night, by means of a thread stretched across the burrow-entrance and attached to a camera and flashlight apparatus, they can be made to take their own flashlight photograph, such as this one, showing the petrel issuing from its burrow.

Photos by Alfred O. Gross

Seven newly-hatched young eiders, cupped in a home lined with soft eiderdown from their mother's breast. They are about ready to leave its protection, never to return.





The sturdy, compact puffin is prepared to encounter the buffets of the open ocean, where it lives except in the nesting season.

Photo by Alfred O. Gross



Puffins are the clowns of birdland. They have been seen to lock their monstrous bills and wrestle on a ledge until both fell down the cliff.

Photo by Alfred M. Bailey



Smaller than the extinct great auks, razorbilled auks are a study in black and white.

Photo by A. A. Allen

In marked contrast with the large and showy gulls, terns, loons, and eiders, is the eerie, elusive Leach's petrel, or "Carey chick", a small, dark grey bird that, under normal conditions, is never seen about its nesting colonies, large or small, in daylight. Leach's petrels, the only petrels that nest on the East Coast of North America, make their homes in burrows in soft, peaty soil on certain coastal islands and headlands and enter and leave their burrows only at night. Before the single egg is laid, both birds may often be found in their burrow together, but during the period of incubation one bird stays on the egg within the burrow while the other is feeding, far out at sea. The exchange of duties takes place at night, and usually only every fourth night, so that each bird spends about 96 hours on the egg without feeding during each of its turns of home duty. As the birds never feed near their home islands, a colony of Leach's petrels, even in the height of the nesting season, when thousands of birds are in their burrows, presents to the eye of a visitor an entirely birdless scene. At midnight, however, it is a place of bustling activity, with birds coming and going like winged ghosts and exchanging their soft purring, twittering cries.

The puffin, razorbilled auk, Atlantic and Brunnich's murres, and black guillemot are members of a family of seabirds that are so specialized for diving and swimming under water that they are often called simply the diving birds, though of course many other kinds of water birds dive. The great auk or garefowl, formerly found on both sides of the Atlantic, was a member of the diving bird family that had carried its adaptation to life under water so far that its wings, while they made highly efficient paddles, were so reduced in size for that use that they could not sustain the heavy bird in the air. The great auk was therefore flightless and able to move about only by swimming and walking. This made it such an easy prey to man that, about a century ago, before the present trend of conservation could reach it, it was exterminated.

The puffin is doubtless the best known of our present population of diving birds, all of which can fly. A chunky little black-and-white creature, the size of a pigeon, with orange feet and a high, compressed, parti-coloured bill like a monstrous Roman nose, it is well termed the clown of birdland. Its bill is remarkable in more ways than one, for not only is it gaudily splashed with blue, vermillion, and yellow, but its

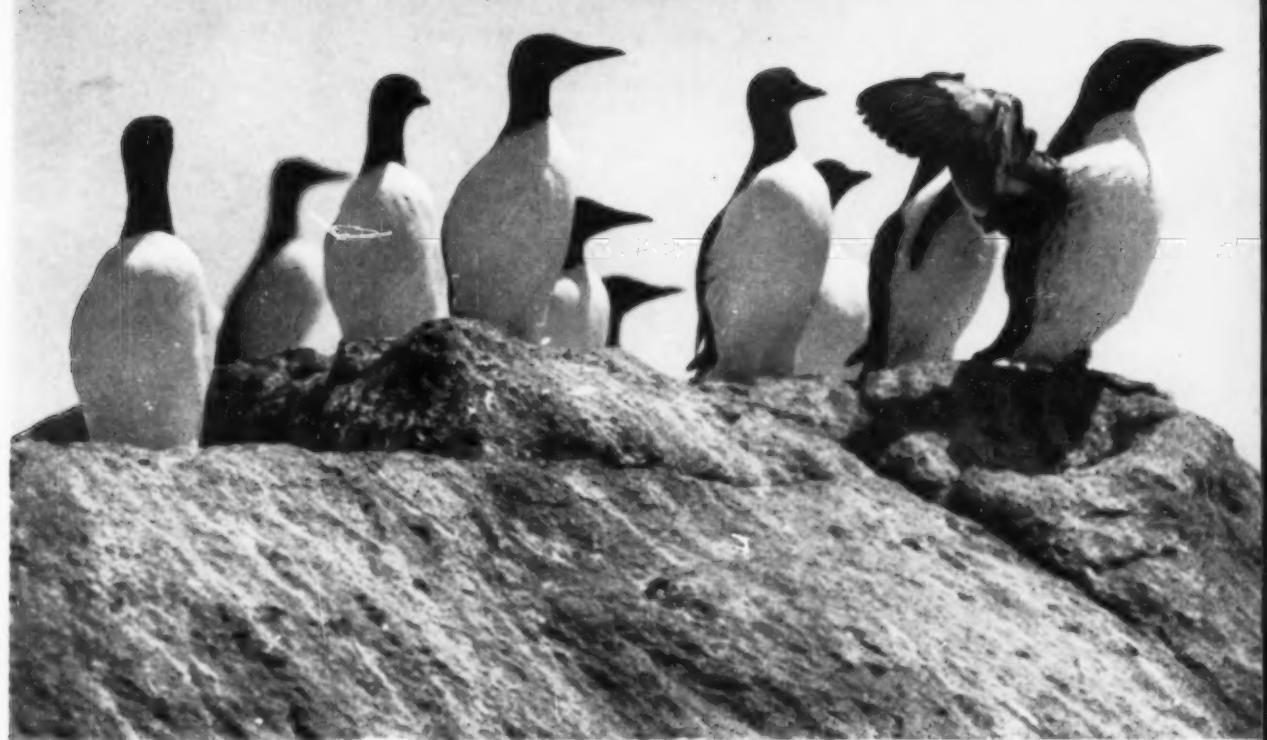


Photo by Alfred O. Gross

Atlantic murres not engaged in incubating their single egg or in obtaining food often gather in sociable groups on top of a boulder or a crag.

outer covering is shed each autumn and renewed each spring.

Razor-billed auks, though much smaller than were the great auks, slightly exceed the puffins in size. Externally they exhibit a black-and-white pattern, but the lining of their mouth, which is opened wide in courtship display, is bright yellow. Auks resemble puffins in shedding annually the outer plates of their beak and in the fact that both of these divers winter on the open ocean.

The Atlantic murre and Brünnich's murre closely resemble each other and the razor-billed auk, but each of these kinds of birds has its own characteristic details of pattern of plumage and form of bill. Murres were greatly reduced in numbers in Canada in the nineteenth century by unrestricted gathering of great quantities of their large, pyriform eggs for commercial purposes. They are among the most foolish of birds.

Many groups of the foolish Atlantic murres have survived only because they laid their eggs in the security of great clefts in the rock.

Photo, Canadian National Parks Bureau





Black guillemots have been compared to pigeons, butterflies and bumble bees.

Photo by A. A. Allen



Like many humans, the recently-hatched black guillemot looks wiser than he is.

Photo by Alfred O. Gross



European cormorants in full dress have the air of distinction that bespeaks ancient lineage. The white flank-patch is a courtship ornament that falls off in early June.

Photo by R. A. Johnson

The dark appearance of black guillemots in summer plumage is relieved by a large white patch in each wing and by coral-red feet and mouth-lining. These gentle little seafowl have such a marked resemblance in form to domestic pigeons that the fishermen almost invariably call them "sea pigeons".

The two kinds of cormorants in Eastern Canada are large black birds, difficult to distinguish at a little distance, although one, called "European cormorant" because it is the common cormorant in Europe, weighs about twice as much as the more abundant double-crested cormorant. The crests of the latter and the white flank-patches of the European cormorant are worn only in spring as courtship ornaments, but, when visible, make identification easy. Cormorants live chiefly on fish, but scientific investigation has shown that those

Parent European cormorants and their young. Partly-grown young cormorants feed by thrusting their heads (one at a time) down a parent's throat, as exemplified here in the family more distant from the camera. This is the original self-serve system.

Photo by A. A. Allen





Some colonies of double-crested cormorants nest in trees, where the remains of winter's snow and ice do not delay nesting so long as on the solid rock.

Photo by A. A. Allen

living in coastal waters take chiefly fish of no economic value and are not destructive to game fish.

The gannet, a magnificent white sea-fowl the size of a goose, with long, black-tipped wings, is one of the most striking birds of the Atlantic Coast and overshadows all others in the Bonaventure Island colony. It does not normally occur away from the north Atlantic. The nesting colonies of this great bird of ancient type are now limited to a number on the coasts of the British Isles, the Faeroes, and Iceland, and to six in North America, namely, Bonaventure Island, Bird Rocks, Anticosti, and the Newfoundland colonies of Cape St. Mary's, Bacalieu Island, and Funk Island. The single young bird that a pair of gannets raises each year on the rocky face of some cliff is deserted by its parents when it is full-grown and fat, and remains without food until, when its mounting hunger drives it in desperation from its home ledge, it is light enough to depart in safety. Gannets dive from the air like terns, but, because of their greater size and weight, their dive is much more spectacular and often throws the glittering spray ten feet in the air. A thrilling sight it is to see a flock of these great birds diving from a height of one hundred feet in such swift succession that the sea appears to boil around them!

Those who live by the ocean or who visit its wind-swept frontiers and those who go down to the sea in ships, in war or in peace, can add greatly to their vivid interests and their enjoyment by looking with seeing eyes on the beauty of form, of colour, and, above all, of motion that the seabirds in their chosen elements display. Let appreciation be shown in conservation of these wild symbols of freedom, that they may ever be sources of content and exhilaration.

Double-crested cormorants are only half the weight of European cormorants and lack the white markings of the latter. At left is depicted a typical nesting of the double-crested cormorant on a ledge of rock.

Photo by Howard Cleaves



In Canada's famous bird sanctuary at Bonaventure Island, Quebec, the handsome gannets have become so numerous as a result of protection that many now are forced to seek nesting sites above the cliff.

Photo Canadian National Parks Bureau



Gannets at home. A pair of these birds raises but one chick a year. The last of the young do not leave their ledge until November.

Photo by Alfred M. Bailey







Red hot shell forgings are lined up to cool.

ANTI-AXIS AMMUNITION

FOREWARD: I welcome the opportunity provided by the Editor of recommending the article here presented to all readers desiring some insight into one phase of Canada's war effort which it is my privilege to supervise as Director General of the Ammunition Production Branch, Department of Munitions and Supply. Censorship regulations do not permit recording the complete story, but sufficient is stated to inform our citizens of an achievement of which Industry may well be proud, one in which fifty thousand men and women of Canada are contributing their best that the front-line troops may not be lacking in one of the vital sinues of war.

E. J. BRUNNING

THE staccato rat-tat-tat of aircraft machine guns and the hollow boom of twenty-five pounders have become familiar sounds on Canada's proving grounds.

These weapons are constantly testing Dominion-made ammunition, which ranges from the diminutive but lethal .303-inch cartridge to the heavy shell, as it flows, a gleaming river of copper brass, and steel

from wilderness factories to the fighting men on all fronts.

Canadian ingenuity has worked this near-miracle, Canadian ingenuity plus the war itself. For despite its inherently destructive nature, modern mechanized warfare has acted as a powerful stimulant on industrial progress, particularly in the development of mass production methods.

Top left:—Welding containers for depth charges.

Bottom left:—The huge melting pot is swung over long rows of casting boxes in a Canadian shell plant and the molten metal poured into the shell forms.



Nowhere, perhaps, is this fact more strikingly illustrated than in Canada's output of shells and small arms ammunition.

The record is the more remarkable since much of the work being turned out is the product of this new war. During 1914-1918, shells were made in large quantities in Canada, but it was not until late in that conflict that the more difficult components and assemblies, such as fuses, were produced to any substantial degree.

To-day, however, Canada not only has produced many millions of shells and hundreds of millions of rounds of small arms ammunition, but it has created a new industry whereby shells are filled with various explosives and shipped overseas as completed rounds of ammunition. Moreover, Canadians have been called upon to turn out growing numbers of depth charges, anti-tank mines, aerial bombs, trench mortar bombs, and pyrotechnics for the armed forces.

Canada's ammunition industry did not begin its tremendous new expansion, however, until France fell and the British Empire found itself standing alone to face a ruthless, well-armed enemy. Britain, its factories subject to continuous bombing and expecting almost hourly the threat of invasion, was forced to look searchingly across the Atlantic for vitally needed supplies.

The United States, sympathetic but still neutral, were ready neither to visualize nor to meet the dreadful implications of total war. It was Canada, therefore, which accepted the challenge and implemented it by the full mobilization of industry.

In the intervening two years, Canada's wartime output of ammunition has doubled, trebled, quadrupled.

Small peace-time arsenals have mushroomed over an area equivalent to that occupied by a fairly large city. Foundries and machine shops have spread themselves similarly to meet the common need. Hundreds of plants manufacturing non-

Top left:—With Canada's war industries humming into ever-increasing production, more and more scrap iron is being gathered throughout the nation and patriotic communities from coast to coast are operating salvage depots. In this photo, a big electric crane is shown as it hauls a fresh load of scrap iron to the furnaces of a munitions plant. Eventually, this particular pile of iron will shower down upon Germany in the shape of 500-pound bombs.

Bottom:—Not so many months ago a field of corn grew in the spot where these howitzer shells now project their snouts. Located in the Province of Quebec, this new plant is one of the largest in the British Empire.

essential goods have been converted, rapidly and efficiently, to war production. Thousands of workers have been recruited from the ranks of labour and are now working on vital production. A growing force of women and girls has been trained to unfamiliar tasks. Mountains of raw materials, many of them coming from new or moribund native sources, have been amassed. A greatly augmented supply of machine tools has been accumulated for constant use.

These elements of production have been merged under hastily-erected roofs, many of them hidden away from prying eyes. Like the tributaries of a great river, their union has swelled into a steady stream flowing to Canada's fighting men.

That her sailors, soldiers, and airmen and those of the United States may respond fittingly under all conditions to the advances of the enemy, Canada is manufacturing a great diversity of ammunition.

In the field of shells, there are 21 different types of 14 calibres. These range from the deadly 37 MM armour-piercing shot to the shattering 7.2-inch in size, and include, among others, the 25-pounder, 3.7-inch anti-aircraft, 4.5-inch howitzer, 4-inch naval, and 2-pounder armour-piercing shot.

In small arms ammunition, Canada is turning out eight kinds of four calibres, which include the ball, tracer, incendiary, and armour-piercing types of .303, .30.06, .22 long, and .38. New capacities will be available shortly for the production of .50, .55, 9 MM, and 20 MM.

Canadian factories are also turning out large quantities of shell components—eight types of fuses, twelve types of cartridge cases, two types of gaines, and five types of primers. In addition, there are 500-pound aerial bombs, practice bombs, two types of depth charges, anti-tank mines, rifle grenades, pyrotechnics of 50 basic kinds for aerial, field, naval, and practice uses, seven types of trench

Top:—Keen-eyed inspectors check every dimension of these 7.2-inch shells as they near the end of the production line at a Quebec factory. New machinery has eliminated many laborious stages in the process of manufacture and made it possible for production in these plants to be steadily increased. A merit system of promotions has been installed to reward with increased responsibility employees who demonstrate skill and intelligence.

Centre:—7.2 shells on the inspection base

Bottom:—Thousands of Canadian women are now employed throughout Canada in shell plants. Checking 7.2 shells in a Government-owned plant in Quebec.





Twenty types of shells are manufactured in Canada.
Close-up of machining operations on 7.2 shells



mortar bombs, and filled rounds of ammunition, bombs, and depth charges.

In this age of warfare in the air, it is significant that Canada should do big things in the production of aerial ammunition.

High above Nazi-occupied Europe, a squadron of R.A.F. multi-engined bombers roars through the night, a deep-throated challenge to the enemy. Presently, a signal is given and "sticks" of 500-pound high explosive bombs hurtle toward the target.

Those bombs were probably made in Canada from scrap metal on a site which less than two years ago was waste scrubland. Acknowledged as one of the largest of its kind in the world, it is now turning out tens of thousands of aerial bombs a year. Appropriately, this factory has on its inspection staff a Polish engineer who knew what it was to be bombed by the German devil-birds near Warsaw.

Or — a lone German plane hovers over a trawler in the North Atlantic. Abruptly, a pencil of light pierces the darkness. Tracer bullets find the mark, and the lurking Hun crumples into the sea, a flaming, smoking victim of a deadly combination of ball, incendiary, and armour-piercing ammunition, guided by flame tracers.

Those tracer bullets were probably fashioned by the skilled hands of French-Canadians working in the shadow of Quebec's Laurentian Mountains. Here, in a sprawling plant, owned by the Canadian Government and operated by a wartime subsidiary of one of Canada's greatest industrial companies, 2,400 men and women, seventy per cent of whom are French-Canadians, are turning out millions of rounds of military small arms ammunition each month.

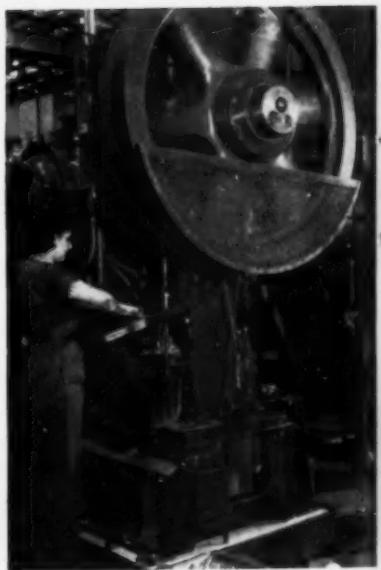
On the desert sands of Libya, a battery of 7 2-inch howitzers speaks and an enemy ammunition dump goes up in a burst of smoke and flame.

Those heavy shells were probably manufactured in a plant near Montreal where skilled artisans take rough shell forgings and, with the help of the most modern methods and machinery, fashion them into the gleaming, deadly finished product.

Slowly revolving on the endless trolley, these huge shells are borne into the painting room at one of Canada's munitions factories. A painter sprays the shell from top to bottom with an air-pressure gun, and the trolley carries it along to the next operation.

A worker keeps check on the number of shells for anti-aircraft guns ready for shipment.





Top left:—A huge tool progress board, part of which is shown here, keeps a record of the number, stage of production, etc., of every tool in a large Canadian plant manufacturing rifle and machine gun ammunition.

Top right:—Scene in a fuse plant in Canada showing testing bench and drilling operations.

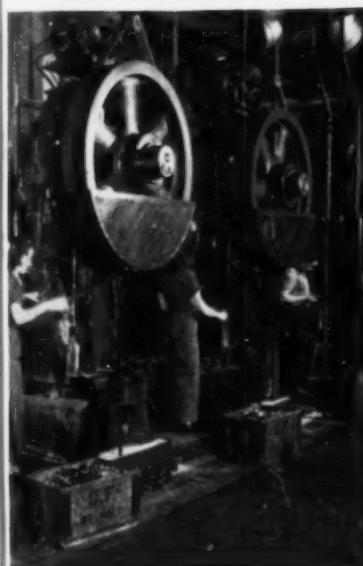
Above:—Bullets by the yard.—.303-inch bullets are clipped from these coils of lead wire.

Centre:—Small arms ammunition manufacture. Female operatives on drawing presses.



Above:—Aptitude tests are applied to all applicants in this rifle and machine gun ammunition plant.

Left:—Labelling cases containing one thousand .303-inch flame tracer cartridges.



Top left:—Women engaged in processing shell fuses.

Top, centre and above:—Thousands of women are employed in small arms ammunition production. Busy scenes in the inspection department

Right:—Tracer bullets, being tested on the 600-yard range. The blazing streaks come from the hot muzzles of three machine



Canadian factories speed up production of depth charges to combat the U-boat menace. A worker in a Pacific Coast plant assembling screw tops for the charges.



Above:—One of Canada's explosive plants, which will produce more than one hundred thousand 500-pound aerial bombs this year. A Polish engineer, "blitzed out" of Poland and France, carries on his fight for Freedom.



Left:—Pouring TNT, one of the deadliest explosives known, into heavy shells. Many thousands are filled in a day.



Below:—Filling depth charges with TNT. Canadian corvettes are using them effectively in sinking enemy submarines.



Painting unfinished 500-pound aerial bombs.

Right:—A 500-pound aerial bomb

Despite the evolution of rapid, efficient mass production methods, the manufacture of shells, small arms ammunition, and bombs is not a job for unskilled hands.

The complete round of ammunition, for instance, has three main parts: the cartridge, which holds the propellant; the shell, loaded with TNT; and the fuse, either percussion or time, which detonates the shell. From a disc of yellow brass to the tapering cylinder ready for the charge of the explosive, 25 separate operations are required.

In one type of percussion fuse, there are 25 parts, each involving a number of distinct operations, and each operation, in turn, requiring precision and close scrutiny.

The .303-inch rifle or machine gun bullet, too, is a complex mechanism. Even with modern equipment and methods far superior to those employed in the last war, the manufacture of the ball and flame tracer cartridge requires 99 and 116 operations respectively.

Aside from the expenditure of private capital to create ammunition production facilities, it is estimated that the Dominion has expended close to \$100 millions in constructing plants for the production of small arms and heavy ammunition, bombs,





Hand and rifle grenades to-day feature prominently on the ever-increasing list of weapons of war produced in Canada. A young worker applying varnish to the centre piece of a grenade which holds the detonator and fuse. Varnish is applied inside and out to protect against corrosion.



Above.—An experienced veteran, who has forty years' service with the company to his credit, gauging grenades.



Left.—Waterproofing liquid being applied to Veerie cartridge flares.

Below.—A shop scene where 3.7-inch anti-aircraft shells are manufactured.



and mines, together with the facilities providing the raw materials for these plants. For example, the Dominion has built and owns two brass factories, each of which cost several millions. Aside from the explosives and chemical factories which provide the propellents and explosives for ammunition, Canadian plants located in every province produce the shells, cartridge cases, fuses, gaines, and primers which go to make up a complete round of heavy ammunition. All told, there are 170 plants engaged in making components for the round of ammunition and many more producing chemical and explosives for the loading of the ammunition.

The small arms ammunition is produced by the Dominion arsenals which have been largely expanded to meet war needs, and in several giant plants where rifle and machine gun ammunition pours out daily in tremendous quantities.

The Canadian production of rifle and machine gun ammunition runs to millions daily. Heavy ammunition is produced at a rate of in excess of a million rounds a month. In addition to the production of ammunition which is filled with Canadian explosives, Canadian plants also produce a surplus of ammunition components which is required to meet British ammunition needs.

This, then, is the story in brief of what several hundred Canadian plants employing upwards of 50,000 men and women are doing to keep loaded guns pointed at the enemy. It is the story of achievement.

Bottom right:—Welding cases for parachute flares.

Below:—Quick-firing cordite is used as a propellant in heavy calibre land and naval gun shells. Young women placing cordite in specially prepared silk bags.



Above:—A munitions worker inspecting the interior of a shell case.





THE FASCINATING CHARLEVOIX COUNTRY

by GEORGE O'NEILL

Photographs courtesy of Herménégilde Lavoie, C. W. Herbert, Gustave Bédard.

IN all that vast extent of intriguing holiday terrain that is the Province of Quebec there is no region more grandly picturesque or more charmingly quaint than Charlevoix, which covers a wide area of the Laurentides highlands bordering on the St. Lawrence north shore, some little distance downstream from Quebec City.

In this zone the Laurentides make perhaps their closest approach to the river bank, and terminate along their southern edge in an almost continuous cliff whose ever-varying altitudes and outline create a wealth of impressive landscapes altogether unique.

Wide horizons, characteristic of the Laurentian scene, frame panoramas of infinite variety and grandeur. Reminiscent of the sea are the vast reaches of the St. Lawrence and the salty tang of the air.

Settlement in Charlevoix is centred along the river and adjacent islands, as communications with the hinterland, until comparatively recent times, were impracticable. This circumstance tended to create a somewhat isolated region of the province along the shore, where ways of life, changing little with the passing years, present

to-day a distinctive, colourful charm delightful to experience. Villages strown along the shore are among the most interesting to be found anywhere in fascinating Old Quebec.

Baie-Saint-Paul occupies a lovely site at the head of a large, deep bay into which at this point the Du Gouffre River flows swiftly through a deep, smooth cleft in the mountain wall, to form a powerful whirlpool. This site is referred to repeatedly in the narrations of the Jesuits, one passage recording a big earthquake in 1663. The old seigniorial mill, in picturesque setting, is a constant source of interest to visitors.

Les Eboulements is another enchanting village, found to-day on the site where, three centuries ago, a small mountain which had stood on the bank of the St. Lawrence slid completely into the river. This landslide created a foreshore of striking beauty which is an important factor in Les Eboulements' popularity as a resort.

St. Joseph-de-la-Rive, nestling on the river bank below Les Eboulements, is a tiny hamlet, an alpine retreat inspiring alike the poet, the artist and the nature lover.







Ile-aux-Coudres, lying off St. Joseph-de-la-Rive and reached therefrom by ferry, is rich in historic souvenirs and holiday attractions. Jacques Cartier, landing there in 1535, caused to be celebrated the first mass ever held on Canadian soil. An old windmill and other relics of early colony days captivate the present-day visitor. Here, too, at one point on the island, a small charming hotel ministers to the needs of the visitors with wholesome fare and comfortable accommodation.

Other delightful resorts farther down the shore are Cap-a-l'aigle, St. Irene, and St. Simeon.

Some ninety miles down river from Quebec City lie the most popular summer

resorts on the entire St. Lawrence course, Pointe-au-Pic and La Malbaie, or Murray Bay, as it is more widely known to the English-speaking world. Here one can enjoy the acme of comfort and indulge in all the varied diversions of a high-class watering place. Here, too, as throughout Charlevoix, hunting and fishing are practised with notable success.

The whole region is the home of the famous Province of Quebec domestic handicrafts industry. Murray Bay blankets and hooked rugs are a famed specialty production of the farmers' busy families during the winter months.

In more recent years, Charlevoix's latent potentialities as a winter holiday region have been developed and are now



the scene of rapidly mounting popularity due to its abundance of snow and ski-ing opportunities.

The approaches to Charlevoix from historic Quebec City provide additional charm for the visitor. By highway, the course winds through the home-land of the habitant along that gently-sloping shelf called the Beaupré Shore. Lying between the mountains and the river. Here, perhaps the old-fashioned villages have been subject to less fundamental change than elsewhere in the province, since the far-off days when the Beaupré Shore formed the first step in colonization attempted outside the stronghold of Quebec. Montmorency Falls, well known for its scenic beauty, and the world-famous Shrine of Sainte-Anne-de-Beaupré are just passed when the highway climbs

abruptly and precipitously to the crest of the highland ridge, which it follows all the way along to Baie-Saint-Paul, the gateway to romantic Charlevoix. Here the French-Canadian of pageant and story may be found in his native habitat contributing vastly to the colour and charm of this rural region.

Back from the river, and served by a good motor road from Baie-Saint-Paul lies the Charlevoix section of the Laurentides Park. Here, camps clustered around Saint-Urbain have proved favoured retreats of anglers. The road from Baie-Saint-Paul continues its way through the Park to Port Alfred on the Saguenay, forming one of the best and most interesting routes from Quebec City into the Lake Saint-Jean country.





EDITOR'S NOTE-BOOK

Harrison F. Lewis, whose article entitled "Feathered Folk by Atlantic Tides" appears in this issue, has had special training in the study of the birds of which he writes and long experience with them in their native haunts. A strong natural interest in birds, manifest early in life, was developed in the more formal channels of science at Acadia University, the University of Toronto, and Cornell University. The position of Chief Federal Migratory Bird Officer for Ontario and Quebec, in what is now the National Parks Bureau, Department of Mines and Resources, enabled Dr. Lewis to supplement his previous observations of seabirds in Nova Scotia and elsewhere along the Atlantic Coast by twenty summers of

experience among the seabird colonies of the northern part of the Gulf of St. Lawrence.

Dr Charles Camsell, C.M.G., Honorary President and Director of The Canadian Geographical Society, and President for twelve years following its inception in 1929, needs no introduction to readers of the Society's Journal. His articles dealing with his own explorations covering a period of a quarter of a century are well known. As a scientist recognized throughout the world and as Deputy Minister of Mines and Resources and Commissioner of the Northwest Territories for the Dominion Government since 1920, his present article carries the authority of his office and vision born of long experience and training.

NOTICE TO MEMBERS AND READERS

MEMBERSHIP DUES

Fifty per cent of the members of the Society pay their annual dues to the Society directly. The adoption of this direct method of remittance saves the Society a large amount each year. General adoption of the plan would conserve an additional sum for the promotion of the Society's objectives.

Every dollar thus saved will implement appreciably the important work which lies ahead: a continuation of authoritative documentary records of Canada's rapidly expanding war effort; the interpretations of Canada in her multi-coloured geographical aspects to her citizens and the outside world; the development and presentation of carefully thought out plans for Reconstruction in a post-war Dominion, based on wise planning in the equitable use of natural resources.

For the purpose of facilitating the adoption of the plan suggested and to safeguard continuity of membership, two official notices, under the Society heading, will be sent out to *all* members regarding expiry date, one reminding members that due date is approaching, sent two months in advance, and another with a covering letter enclosing an account for renewal of membership sent one month in advance.

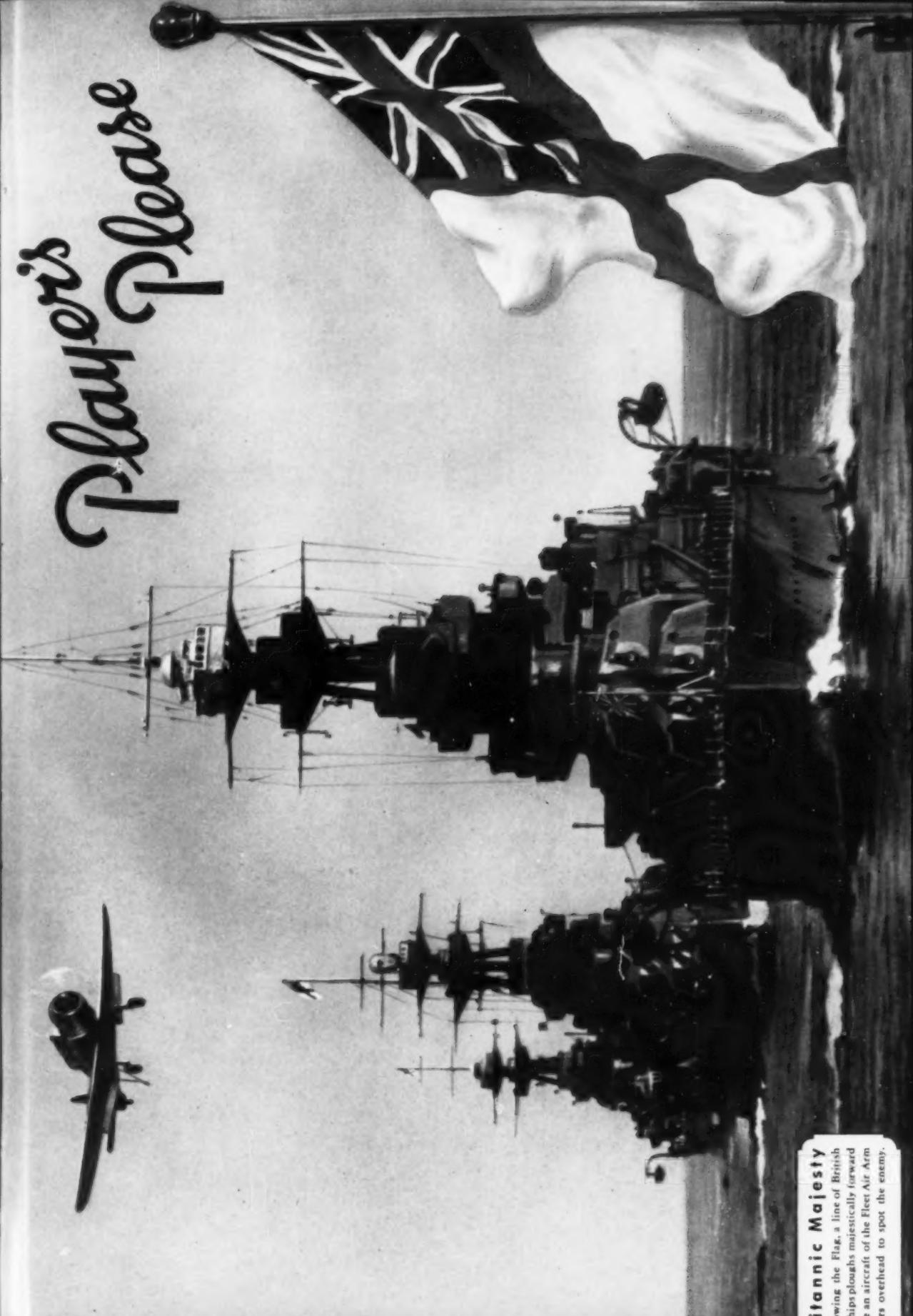
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AMONGST THE NEW BOOKS

So You Want a War Job, by CHARLES CLAY (Toronto, Oxford University Press, 1942, 75 cents). Mr. Clay's book is written for home-front Canadians who are eager to contribute their share in winning the war but who have not a clear idea of the many ways in which they can actually do their bit. The exhortations in public meetings, over the radio, and even newspaper articles are more or less ephemeral, inspiring at the time, but the ideas suggested soon become blurred, and discouragement takes the place of effort. In this admirable little book, we have "all the answers". Every chapter is filled with concrete suggestions of effective jobs that can be performed by any "home-front" soldier no matter how busy he or she may be with ordinary routine in business or household.

Among the thirty or so definite war jobs outlined by Mr. Clay, those which are dealt with in the financial chapters on war savings, taxation, Red Cross and war charities cannot be improved upon for brief clear exposition of the meaning, need and value of these phases of our present-life programme. The Salvage campaign and set-up is explained and commended by its remarkable cumulative results, not only in materials gained but in better habits of thrift. The importance of health and morale, of fair-mindedness in dealing with those of other racial origins, of the absolute necessity of stopping rumours and refraining from careless talk which might bring calamity to those who fight our battles on sea and in the air, are discussed in short crisp chapters and driven home by illuminating incidents and apt quotations.

Mr. Clay is in close touch with government departments and is careful to give exact figures and definite information, his footnotes being not the least valuable features of the book, often, as they do, furnishing references to pamphlets and other publications for more intensive study. Many people will find particularly valuable the chapters on how to maintain stability in the midst of war's terrors, the necessity of vigorously carrying on one's normal avocations, sport, cultural, hobby pastime, pursuits of various kinds. Those of us who approve heartily of the learned societies continuing their meetings have been apt to frown on the time given to sport and to severely criticize the radio announcer when he abruptly closes his account of war news to bring on a sports bulletin. Mr. Clay points out that "organized sport is an excellent safety valve for tense home-front war nerves. So is individual sport . . . It tends to disarm brooding, it stiffens spirits, it summons resilience", and he quotes J. A. Spender: "It is just their remoteness from the awful happenings which give them their virtue for the millions who have no other ivory tower".

A very delightful chapter on reading as an antidote to "total" war, and a good index, conclude this fine little book which should be in the hands and home of every Canadian. "In moments of haziness, bewilderment, discouragement, despair, it can be picked up off the living-room table and read again; it should refreshen, reinvigorate, encourage wilting endeavour. There are important war jobs for all of us to do. Let us do them".

F. E. FORSEY